BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking To Enhance the Role of Demand Response in Meeting the State's Resource Planning Needs and Operational Requirements	R.13-09-011 Filed September 19, 2013

COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON ASIGNED COMMISSIONER AND ADMINISTRATIVE LAW JUDGE'S RULING PROVIDING GUIDANCE FOR SUBMITTING DEMAND RESPONSE PROGRAM PROPOSALS

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March 3, 2014

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The California Energy Storage Alliance ("CESA")[1] hereby submits these comments pursuant to the Rules of Practice and Procedure of the California Public Utilities Commission and the Assigned Commissioner and Administrative Law Judge's Ruling Providing Guidance for Submitting Demand Response Program Proposals, issued January 31, 2014 ("Ruling").

I. INTRODUCTION.

CESA appreciates this opportunity to file a proposal following the same guidance as provided to the utilities in the Ruling, and also provide additional responses and data in response to prior questions and comments related to bridge funding, and recommendations on improving demand response program reliability and effectiveness.[2]

[1] The views expressed in these comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies. http://storagealliance.org.

[2] CESA reserves the right to provide additional comment on proposals submitted by other parties, and also looks forward to commenting on supply side DR rules, RA counting mechanisms, and the design of new DR Product in the Proposed Decision Addressing Foundational Issue of the Bifurcation of Demand Response Programs, issued in this proceeding on February 21, 2014.

II. CESA'S PERMANENT LOAD SHIFTING DEMAND RESPONSE PROGRAM PROPOSAL.

Given the program revision are limited financially to the amount approved for 2013 and 2014 as approved by D.12-04-045 and D.13-04-017 and the Commission's needs to prioritize spending, CESA would like to draw the Commission's attention to the necessity of maintaining funding for Permanent Load Shifting ("PLS"). PLS programs have proven to be a key asset in shifting electric loads during critical congestion periods and smoothing California's daily load. As a flexible and fully dispatchable resource, PLS should continue to be one the Commission's priorities for load modifying programs. CESA urges the commission to re-authorize this program as soon as possible with the program modifications included in Appendix 1 to these comments.

III. CESA'S RESPONSES TO SPECIFIC QUESTIONS POSED BY THE COMMISSION IN THE RULING.

CESA hereby provides the following responses to specific questions posed in the Ruling:

1. PG&E has requested that, if and when the Commission approves its Motion to Approve a Partial Settlement Agreement in A.12-11-009 and Investigation (I.) 13-03-007, the Commission approve the $2.9 million increase in recovery rates for demand response programs. These funds are proposed to be moved from PG&E's General Rate Case to its demand response program budgets to fund employee benefits. If the Commission approves the settlement in A.12-11-009 and I.13-03-007, and if we were to approve the increase in demand response budgets for 2015 and 2016, what budget categories would be impacted and what would the impact be in dollar amounts?

***CESA's* Response**: Any increase in recovery rates for DR programs should go toward enabling increased penetration of DR resources regardless of the funding source. The Commission's Proposed Decision in R.12-03-014[3] sets out assumptions for demand response

[3] *See, Decision Authorizing Long-Term Procurement for Local Capacity Requirements Due to Permanent Retirement of San Onofre Nuclear Generating Stations*, issued on February 11, 2014.

resources for 2018 and 2022, of 189 MW of "fast" demand response (potential to be activated in thirty minutes or less after the first contingency) to be modeled as a "First Contingency" resource and 997 MW of DR which is to be accounted for as a "Second Contingency Resource." The Proposed Decision finds "that there is a reasonable likelihood that more demand response resources will be available for such purposes in the future" (p. 57). CESA recommends that the value of increasing any type of funding must correlate with the actual dispatch of these resources.

2. The Utility Reform Network (TURN) recommends reducing the revenue requirement for demand response programs by at least 50 percent, to account for lower actual spending in 2012-2013. TURN provided a chart of actual spending through August 2013. Furthermore, SDG&E and PG&E requested that the Commission authorize the spending of the remaining unspent 2012-2014 funds during the 2015-2016 bridge funding. PG&E, SDG&E and SCE shall provide responses as to why they have each only spent less than 25 percent of a three-year budget over the course of 20 months and why this unspent funding should be made available to them in the 2015-2016 demand response program bridge funding.

CESA's Response: Given the identified under-utilization of certain DR programs, CESA recommends that addressing market barriers and enabling DR market participants to recover the full value of the services provided are, and should be, a very high priority for the Commission. Resolving the existing tensions in DR programs is the only reasonable pathway toward offsetting the use of traditional fossil fuel resources in emergency events. The Commission Staff Report titled *Lessons Learned From Summer 2012 Southern California Investor Owned Utilities' Demand Response Programs* analyzed DR programs in California. The Commission's DR Rulemaking (R.13-09-011) reiterates the findings of the report: "The Staff Report indicates that, historically, SCE and SDG&E underutilized demand response programs and dispatched their power plants to meet peak demand far more frequently in comparison to demand response programs. The demand response programs were not utilized to their full Resource Adequacy

capacity even during extremely hot weather conditions. Staff found that SCE also deployed a dispatch strategy for its residential air conditioning cycling program that was intended to minimize customer fatigue but resulted in the program delivering less demand response capacity. Staff also found that SCE's and SDG&E's Peak Time Rebate (PTR) programs have a potentially large 'free-ridership' problem. Over $35 million of their PTR program incentives were paid to customers without providing significant load reduction (about 85%-94% of total paid incentives).

Based on these findings, CESA supports TURN and agrees that reducing the revenue requirements for DR programs is justified without program reform. However, the central issue remains the pursuit of initiatives that address DR program limitations: opportunity cost and utility perceived customer fatigue, "free ridership," dispatchability limitations, and unaligned market mechanisms. These solutions alone will encourage a broad base of market participants to deliver cost-effective solutions to California ratepayers. Permanent Load Shifting addressed in Appendix 1(as well as third party aggregated DR resources) have the potential of addressing many of these issues. Creating the correct incentive structures will result in a cleaner, more efficient, reliable, and cost effective electric power system.

3. In the case of funding for pilots in 2015 and 2016, D.12-04-045 requires that pilots approved for 2012-2014 be completed by December 31, 2014. As proposed in the Order Instituting Rulemaking, the pilot funds will be earmarked for the staff proposed pilots in 2015 and 2016. Utilities shall provide comments or concerns regarding this issue; other parties may comment as well.

CESA's Response: CESA agrees that 2015 and 2016 are a reasonable time frame as long as any current pilot projects aren't affected by this change. CESA encourages the Commission to explore pilot projects that assess the value of two-way flexibility in economic and emergency DR events. Energy storage resources such as PLS, by charging and discharging, can provide a flexible range of highly dispatchable DR products. The Commission should therefor approve

extended funding for Permanent Load Shifting with the program modifications recommended in Appendix 1.

IV. CONCLUSION

CESA appreciates this opportunity to comment on the Ruling, and looks forward to working with the Commission and stakeholders in this proceeding.

Respectfully submitted,

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Date: March 3, 2014

APPENDIX 1

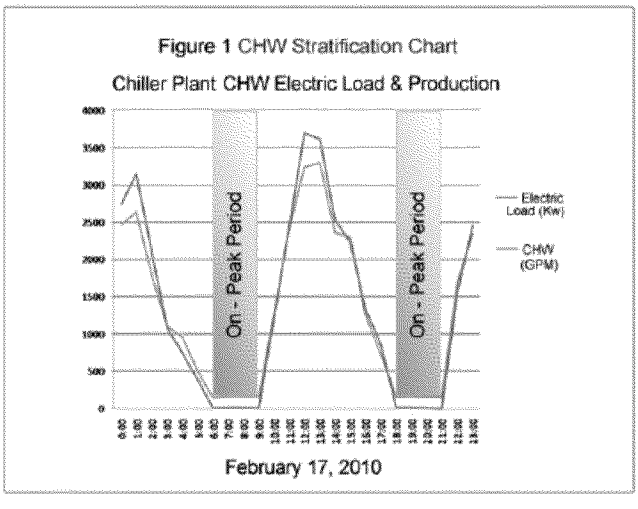
Appendix 1

Background – the Value of Thermal Energy Storage and the Permanent Load Shift Program:

The primary focus of thermal storage over the last 30 years has been to shift cooling loads from the peak electric rate period as dictated by the utility rate structures. This saves end-users money by reducing electric bills and helps the utility reduce peak electric loads during critical congestion periods. Thus, the perception has evolved that thermal storage is good for shifting loads from a single peak period and might be less effective for multiple peaks. However, the technology is equally effective for multiple peak loads during the course of the day, and can dispatch to meet the utility and customer's needs.

The Permanent Load Shift (PLS) program benefits California ratepayers by increasing the penetration of thermal energy storage (TES) installations across the state. TES systems are a proven large-scale energy storage technology that economical and easy to deploy wherever there is a large chilled water-cooling system. The benefits of greater TES include:

1. Ability to smooth California's daily load profile with multiple peaks. Because of its long dispatch duration, TES can reduce multiple peaks within a single day. For example, TES installations in Florida are already providing this dual-peak reduction. At the University of Central Florida in Orlando, DN Tanks has installed a TES system that eliminates the electric load of the campus's district cooling loop during the wintertime dual-peak periods of 6-10am and 6-10pm. (See Figure 1 for UCF's load curve.)



Thermal storage provides the grid with a flexible tool that allows utilities, grids, and end-users with the opportunity to dispatch when the need for conservation is greatest. As California's load profile continues to evolve over the next generation, this flexibility will be key to maintaining a reliable grid.

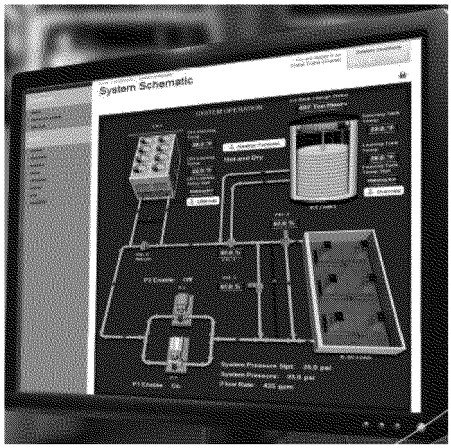
Figure 1

2. Flexible and fully dispatchable resource for congestion relief. TES systems are typically integrated into the building controls of an end-user site, allowing for great flexibility in how the thermal storage is dispatched.

3.

This is particularly valuable because of TES's long lifespan – thermal storage installations have been proven to last 25 years or longer, even if fully charged and discharged on a daily basis.

Dispatch flexibility provides great value for both customers and the grid, as the flexibility allows TES users to shift dispatch parameters for maximum benefit. For example, 1500 Walnut Street, an office building in Philadelphia, installed CALMAC's IceBanks to reduce peak demand at the site. Over time, the building's management realized that the IceBank thermal storage was more valuable when also used for Demand Response. Demand Response protocols were thus programmed into the building controls, so that the building controls can receive external signals from the Demand Response provider, and adjust the IceBanks' output accordingly.



California is seeing its load curve change dramatically due to the infusion of intermittent resources such as wind and solar. Thermal storage enables customers and the grid to respond dynamically to the changing load curve, and will thus serve as a valuable resource to California's electrical system for decades to come.

Figure 2 – Trane Tracer building control interface

4. **Clean and cost-effective demand reduction for the California grid.** As PGE has stated, the PLS incentive serves to "reduce the likelihood of shortages during peak periods, and lower system costs overall by reducing the need for peaking units."
5.

By improving California's load factor, TES decreases congestion on California's transmission infrastructure while cutting the need to run expensive, inefficient, and highly polluting peaker plants, typically powered by fossil fuels. These peaking units emit far more carbon than most other energy sources; additionally, they create smog as well, and are often the source of Environmental Justice issues.

Solutions:

1. **Extend the PLS program.** The PLS program was publically released in the second half of 2013. PG&E's first public workshop for the program was November 20, 2013. The PLS program is set to expire at the end of 2014. This short window did not provide end-users the opportunity to fully take advantage of the incentive; because of its small duration, the utilities and those involved in the industry are still in the process of disseminating the program information to the public. By extending the PLS program through 2020 at the current funding level of $32 million annually, California will enable end-users to plan, fund, and then integrate thermal energy storage into their new constructions and retrofit programs.

2. **Reduce Feasibility Study requirements to subjects that are germane to peak-load reduction.** The PLS program is designed to benefit both customers and utilities. According to PG&E's PLS Program Manual, the incentive "is designed to help customers

shift their cooling electricity use and lower their energy costs." Several of the utilities' PLS program requirements and stipulations undermine these intentions. By including excessive Measurement and Verification (M&V) requirements and demanding onerous and unnecessary components within the required pre-installation Feasibility Studies, the utilities are making the PLS program compliance more costly and time-intensive which could prove to be a barrier to meeting its goals.

Many of the utilities' requirements are costly and do not provide information that is useful to determining whether an installation is effectively reducing load. Examples include (but are not limited to):

- Non-cooling load data
- Controls schematics
- Siting information
- Energy usage calculations
- Air handling efficiencies

This information is costly to gather and provide - adding tens of thousands of dollars to customers' costs - and has no practical use for the mission of incentivizing permanent load shift projects. Potential customers are hesitant to bear these costs when there is no certainty that the incentive monies will be available. The focus should be solely on peak load reduction; the measurement of existing cooling plant loads and the measurement of the load shifted after the energy storage equipment is operational.

Perhaps the longstanding, demonstrably successful Florida Power & Light (FP&L) program could be used as an outline for the feasibility requirements.

3. **Ease M&V requirements.** M&V requirements for the PLS program are excessive and require costly equipment. Some M&V is valuable and important - PLS program beneficiaries need to document before-and-after peak-hour kW. All other components of a study are unnecessary and costly to the user, the utility, and the ratepayer population. When one reads the M&V requirements in the PG&E manual for the PLS program one can easily understand why owners and engineers would hesitate to pursue the program. It could be significantly simplified by:
    a. Using industry standard information, such as guidelines offered by DOE or AHRI, to determine design day pre-installation parameters; OR
    b. Comparing the actual measured peak electric load of major central plant equipment (chillers, cooling towers, pumps, etc.) during the peak period of time before and after the TES installation. (Only if the design day type conditions are available pre-installation, or easily reproducible within the first year)
    c. After the TES system is fully implemented, monitoring the kW load of those major mechanical components (chiller, cooling tower fans, condenser pumps, etc.) to confirm that they regularly shut down during the peak period. Monitor this information every 15 minutes.

d. Ensuring that all monitoring equipment is regularly calibrated to manufacturer's recommended standards.

Again, this M&V methodology for calculating kW load shift resembles that of successful peak-load reduction programs across the country, including FP&L's program.

4. **Change payment structure to resemble SGIP's.** The easiest and most effective way to fairly distribute the PLS funds is to provide 50% of the PLS rebate upon completion and 50% upon verification of the system's shifted load after the first cooling season. The 2nd payment would be adjusted for actual load shifted. This streamlined approach removes the risk from the utilities; they would not be paying incentives for loads that were never shifted. The utilities then could significantly simplify the feasibility and M&V requirements since they know that they would only be paying for actual loads shifted. The potential customers would be more inclined to move forward with projects if the feasibility and M&V requirements were less engineering intensive and less costly. And reducing the cost of the feasibility study and M&V would not compromise the accuracy of the payment since the second payment is adjusted based on the documented load shifted.

5. **Change conversion factor calculations for existing buildings.**
When converting tons to kW shifted the current PLS conversion factors are 1.2 kW/ton for chilled water plants using screw type compressors and 0.7 kW/ton for water-cooled centrifugal-based chilled water plants. This is fine for new construction, as they are reasonable estimates. However, for existing buildings the cooling plants are likely to be much less efficient. Since the potential client will have to measure plant efficiencies, why not use the actual efficiency measured? And if PLS uses the 50/50 payment plan, as discussed above, then any inaccuracies in the measurements can be corrected by adjusting the second portion of the payment.